CLAIMS

1. A transmission device (1;19,20) for transmitting an alternating magnetic field to a receiver (3;15;21), which is implanted in a human's or animal's body to supply energy drawn from the alternating magnetic field to an energy consuming implant (17) in the human's or animal's body, the transmission device comprising a coil (6) adapted to generate the alternating magnetic field in a desired direction towards the implanted receiver, the coil having a longitudinal extension, a front end to be directed towards the receiver and a rear end to be directed away from the receiver, **characterized** by a shield (7;12) adapted to shield the environment from the alternating magnetic field generated by the coil (6) except at the front end of the coil (6), the shield including a magnetizable core (8) extending in the coil and a magnetizable casing (9) integrated with the core and surrounding the rear end of the coil and the circumference of the coil along at least a portion of the longitudinal extension of the coil.

2. A transmission device according to claim 1, wherein the casing (9) completely surrounds the coil (6) except the front end thereof.

3. A transmission device according to claim 2, wherein the core (8) wholly extends along the longitudinal extension of the coil (6).

4. A transmission device according to claim 1, wherein the casing (9) surrounds the circumference of the coil (6) along a portion of the longitudinal extension of the coil.

5. A transmission device according to claim 4, wherein the core (8) and/or coil (6) extends past the casing (9) along the longitudinal extension of the coil, as seen in the direction towards the front end of the coil.

6. A transmission device according to any one of claims 1-5, wherein the casing (9) comprises a circular cylindrical wall (10;13) and a circular gable wall (11) joined to the cylindrical wall, the core (8) extends centrally in the cylindrical wall from the gable wall and the coil (6) is applied on the core with the rear end of the coil facing the gable wall.

7. A transmission device according to claim 6, wherein the cylindrical wall (13) is provided with cut-outs (14).

8. A transmission device according to any one of claims 1-7, wherein the shield (7;12) is made of ferrite.

9. A transmission device according to any one of claims 1-8, further comprising a plastic box (5), in which the coil (6) and shield (7;12) are arranged such that they are located at a distance, in the order of centimeters, from an operator's hand (2), when the operator holds the transmission device during operation.

10. An apparatus for wireless transfer of energy from outside a human's or animal's body to an energy consuming medical device (17) implanted in the human's or animal's body, comprising a transmission device (1;19,20) operable from outside the human's or animal's body for transmission of an alternating magnetic field, and a receiver (3;15;21) implantable in the human's or animal's body for receiving and drawing energy from the

alternating magnetic field to be supplied to the energy consuming implanted medical device, the transmission device including at least one coil (6) for generating the alternating magnetic field in a desired direction towards the receiver, the coil having a longitudinal extension, a front end to be directed towards the receiver and a rear to be directed away from the receiver, **characterized** by at least one shield (7) adapted to shield the environment from the alternating magnetic field generated by the coil (6) except at the front end of the coil (6), the shield including a magnetizable core (8) extending in the coil and a magnetizable casing (9) integrated with the core and surrounding the rear end of the coil and the circumference of the coil along at least a portion of the longitudinal extension of the coil.

11. An apparatus according to claim 10, wherein the transmission device comprises a first transmitter (19) and a second transmitter (20), the first and second transmitters include first and second coils (6), respectively, for generating respective alternating magnetic fields in two different directions towards the receiver (21), each of the first and second coils having a longitudinal extension, a front end to be directed towards the receiver and a rear end to be directed away from the receiver, and the first and second transmitters include first and second shields (9) adapted to shield the environment from the alternating magnetic fields, each of the first and second shields including a magnetizable core (8) extending in the coil and a magnetizable casing (9) integrated with the core and surrounding the rear end of the coil and the circumference of the coil along at least a portion of the longitudinal extension of the coil.

12. An apparatus according to claim 10, wherein the casing (9) completely surrounds the coil (6) except the front end thereof.

13. An apparatus according to claim 12, wherein the core (8) wholly extends along the longitudinal extension of the coil (6).

14. An apparatus according to claim 10, wherein the casing (9) surrounds the circumference of the coil (6) along a portion of the longitudinal extension of the coil.

15. An apparatus according to claim 14, wherein the core (8) and/or coil (6) extends past the casing (9) along the longitudinal extension of the coil, as seen in the direction towards the front end of the coil.

16. An apparatus according to any one of claims 10, 12-15, wherein the casing (9) comprises a circular cylindrical wall (10;13) and a circular gable wall (11) joined to the cylindrical wall, the core (8) extends centrally in the cylindrical wall from the gable wall and the coil is applied on the core with the rear end of the coil facing the gable wall.

17. An apparatus according to claim 16, wherein the cylindrical wall (13) is provided with cut-outs (14).

18. An apparatus according to any one of claims 10, 12-17, wherein the shield (7) is made of ferrite.

19. An apparatus according to any one of claims 10, 12-18, further comprising a plastic box (5), in which the coil (6) and shield (7) are arranged such that they are located at a distance,

in the order of centimeters, from an operator's hand, when the operator holds the transmission device (1;19,20) during operation.

20. A method for harmless wireless transfer of energy to an energy consuming medical device (17) implanted in a human's or animal's body, comprising implanting in the human or animal a receiver (3;15;21) capable of receiving and drawing energy from an alternating magnetic field to be supplied to the energy consuming medical device, manually holding external to the body a transmission device (1;19,20) capable of transmitting the alternating magnetic field, the transmission device including a coil (6) for generating the magnetic field and having a longitudinal extension, a front end directed away from the hand holding the transmission device and a rear end facing the hand holding the transmission device, and transmitting by means of the transmission device the alternating magnetic field to the implanted receiver, **characterized** by shielding by means of a shield (7) the hand holding the transmission device (1;19,20) from the alternating magnetic field generated by the coil (6), the shield including a magnetizable core (8) extending in the coil (6) of the transmission device and a magnetizable casing (9) integrated with the core of the transmission device and surrounding the rear end of the coil and the circumference of the coil along at least a portion of the longitudinal extension of the coil.

21. A method for harmless wireless transfer of energy to an energy consuming medical device (17) implanted in a human's or animal's body, comprising implanting in the human or animal a receiver (3;15;21) capable of receiving and drawing energy from an alternating magnetic field to be supplied to the energy

consuming medical device, providing an external transmission device (1;19,20) capable of transmitting the alternating magnetic field and including a coil (6) having a longitudinal extension, a front end and a rear end, positioning the transmission device relative to the body so that the front end of the coil is directed towards the receiver and the rear end of the coil is directed away from the receiver, and transmitting by means of the transmission device the alternating magnetic field to the implanted receiver, **characterized** by shielding by means of a shield (7) the environment from the alternating magnetic field generated by the coil (6) except at the front end of the coil (6), the shield including a magnetizable core (8) extending in the coil of the transmission device and a magnetizable casing integrated with the core of the transmission device and surrounding the rear end of the coil and the circumference of the coil along at least a portion of the longitudinal extension of the coil.